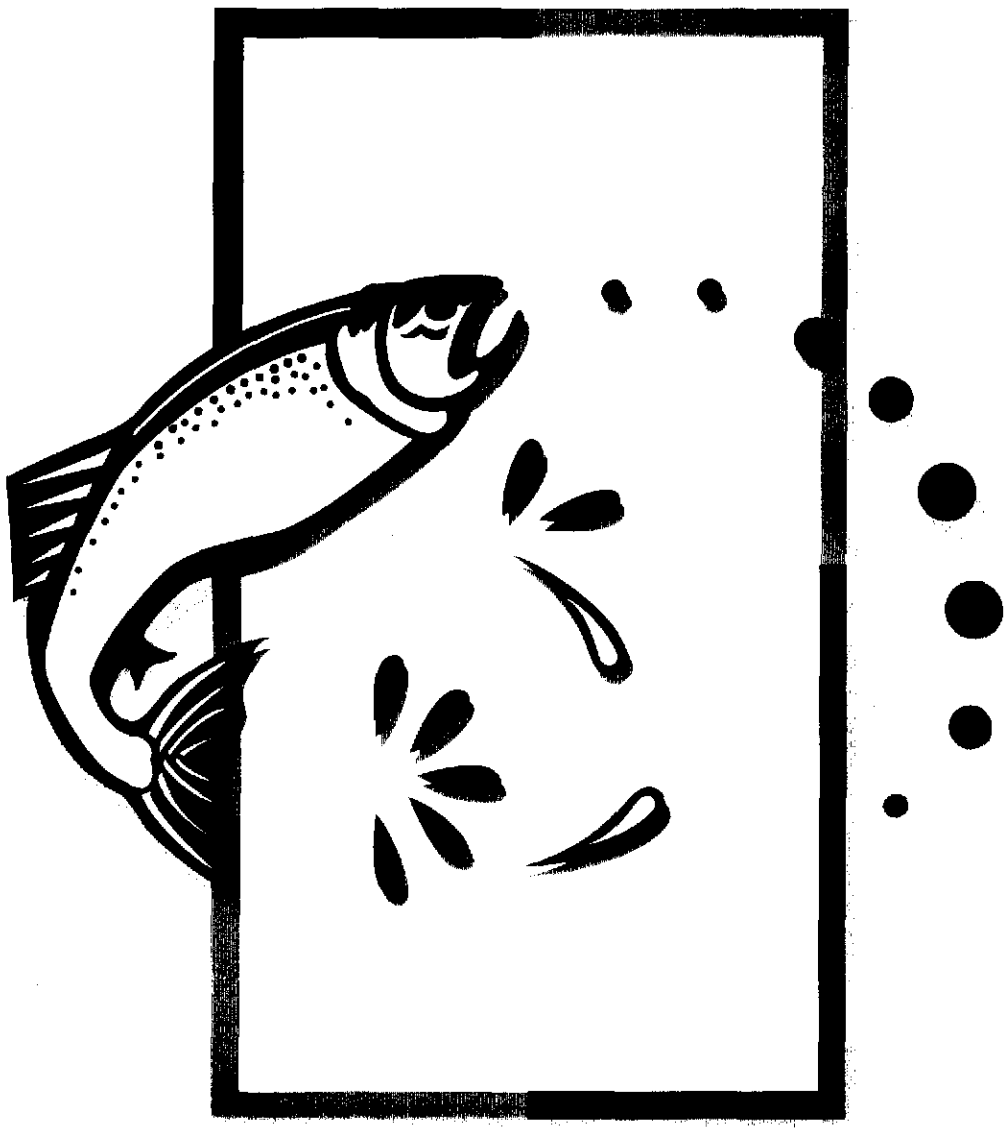
FI-183

Mill Creek

Watershed Flood Damage Assessment/ GIS Mapping and Monitoring/ Implementation Project



Mill Creek Conservancy

July 1997

I-004147

Executive Summary

Title: Mill Creek Watershed Flood Damage Assessment/GIS Mapping and Monitoring/Implementation Project

Applicant: Mill Creek Conservancy

Project Description and Primary Biological/Ecological Objectives

Mill Creek was dramatically affected by the January 1, 1997, flood event. Damage included road washouts, stream channel movement, loss of shaded riparian area (SRA), stream bank erosion resulting in property loss, loss of anadromous fishery studies equipment, destruction of irrigation diversion facilities, washout of Clough Dam, and movement of sediments and bedload to the lower reach and creek mouth.

The Mill Creek Watershed is noted for its relatively pristine nature and its importance as holding and spawning habitat for several species of anadromous fish, including spring-run, fall-run, and late-fall-run Chinook salmon and steelhead trout. The project will provide post-flood event baseline information necessary to monitor the recovery of the stream corridor. The project also will provide a tool to evaluate priority areas for implementation projects outlined in the *Mill Creek Watershed Management Strategy Report* (January 1997).

Approach/Tasks/Schedule

The approach includes field reconnaissance; data acquisition; data interpretation; strategizing and prioritizing restoration activities; and developing presentation tools. The work would include six tasks in two phases. Phase I tasks include: 1) color infrared (CIR) aerial photography and digital orthophotography; 2) new enhanced mapping; 3) flood damage assessment; 4) developing long-term resource protection strategies; and 5) developing presentation/communications materials. Phase II involves Task 6), acquire new aerial photography. Phase I (Tasks 1-5) will be completed in approximately 1 year. Phase II (Task 6) will occur 2 years after Task 1 is completed and will require approximately 4 months.

Justification for Project and Funding by CALFED

The Mill Creek Watershed Management Program included the *Mill Creek Watershed Management Strategy Report* (Report) and the Mill Creek Watershed Geographic Information System (GIS). The existing GIS provides watershed base mapping; individual reach maps; and resource layers. The proposed project will further develop GIS mapping, including riparian vegetation, topography, fire history, and water quality. It will also map flood-impacted areas, including riparian habitat loss, channel movement areas, structural facility damage (i.e., bridges, roads, LMMWC facilities, Clough Dam), significant streambank erosion, and fish passage barriers. The project is consistent with several Watershed Advisory Committee recommendations. Funding would constitute implementation of the stakeholders' recommendations. The proposal would expand the watershed database that is shared with stakeholders. It would allow existing systems to be upgraded to improve the quality of watershed information for monitoring. The project is directly linked with the *Mill Creek Watershed Management Strategy Report*

recommendations and restoration objectives of CALFED for anadromous fish and other sensitive species and riparian habitat.

Budget Costs and Third Party Impacts

Phase I can be completed for a cost of $163,570. Phase II can be completed for $52,130. No direct third party impacts are anticipated from this non-intrusive project.

Applicant Qualifications

The Mill Creek Conservancy (Conservancy) is a nonprofit conservation organization of local landowners, formed in 1994, dedicated to preserving and managing the Mill Creek Watershed ecosystem. The Conservancy has effectively organized landowners, agencies, and other stakeholders for conservation and restoration projects and successfully rallied support and raised funds from numerous local, state, and federal agencies. Among the successful Conservancy projects and accomplishments are the Management Strategy for Mill Creek, creation and adoption of the Deer and Mill Creek Protection Act (AB 1413), completion of the *Mill Creek Watershed Management Strategy Report* through an EPA 319 grant, and the Mill Creek Watershed GIS project funded by the Fish and Wildlife Foundation.

Monitoring and Data Evaluation

The project will provide baseline data on a 1-mile-wide corridor along Mill Creek. The project will also evaluate water quality data pertinent to anadromous fisheries. The Conservancy has a partnership with the DWR and has secured monitoring sites on private property. The Conservancy assists in the Los Molinos Unified School District Water Quality Monitoring Program. The Watershed Advisory Committee (WAC) identified monitoring as a key Mill Creek Watershed activity. The annual WAC meetings allow a forum to discuss the data and evaluate appropriate actions.

Local Support/Coordination with Other Programs/Compatibility with CALFED Objectives

The successful completion of the 1997 *Mill Creek Watershed Management Strategy Report* (Report) exemplifies the broad local support fostered by the Conservancy. An MOU to create a Mill Creek Watershed Management Strategy established a cooperative agreement among 17 signatories for a 3-year period. Local signatories include the LMMWC, Tehama County Board of Supervisors, Sierra Pacific Industries, Nor Cal Guides, Collins Pine Company, Los Molinos Unified School District, Tehama County Natural Resource Conservation Service, and Tehama County RCD. Many other local stakeholders participate in Conservancy activities.

The project is necessary to implement the Report recommendations, including specific strategies for permanent anadromous fish monitoring programs; increasing anadromous fish productivity and sustainable wild populations; improving wildlife habitat; reducing sedimentation, erosion, and soil disturbance; restoring and maintaining native vegetation; protecting and enhancing water quality; improving fish habitat and passage; and protecting and restoring habitat for threatened, endangered, and sensitive species; continuing resource protection efforts; GIS use; and developing a work program, based on WAC recommendations, that consider key indicators of watershed health and measurable objectives. All of these objectives are explicitly compatible with CALFED objectives.

Mill Creek Watershed Flood Damage Assessment/GIS Mapping and Monitoring/Implementation Project

Mill Creek Conservancy
P.O. Box 188
Los Molinos, California 96055
Phone: 916/595-4493 or 916/384-2734
Fax: 916/595-4490 or 916/384-0161
Contact Persons: Burt Bundy, Conservancy President; Kerry Burke, Resource Coordinator

Type of Organization and Tax Status

California Non-Profit Corporation with 501(c)(3) tax exempt status

Tax Identification Number and/or Contractor License, as applicable

68-0355255

Technical and Financial Contact Person(s)

Technical - Same as above
Financial - Judd Hanna, Rt. 5, Box 2700, Mill Creek, CA 96061
Phone: 916/595-4493; Fax: 916/595-4490
E-mail-juddhanna@aol.com

Participants/Collaborators in Implementation

CH2M HILL
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Redding, California 96049-2478
Phone: 916/243-5886; Fax: 916/243-1654
Contact persons:
Peter Rude, P.E., Project Manager, Ext. 3396, E-mail–prude@ch2m.com
Ron Fehringer, P.E., Project Engineer, Ext. 3382, E-mail–rfehringer@ch2m.com
Barb Schmitz, GIS Coordinator, Ext. 3433, E-mail–bschmitz@ch2m.com

RFP Project Group Types(s) (Construction; Acquisition; Other Services)

Group 3: Services. The proposed project is a non-construction, habitat restoration planning project.

Project Description

Project Description and Approach

Mill Creek was dramatically affected by January 1, 1997, flood event. Damage in the upper and lower reaches included road washouts, stream channel movement, shaded riverine aquatic (SRA) habitat loss, stream bank erosion resulting in property loss, loss of anadromous fishery studies equipment (water quality and temperature monitoring equipment; screw traps), destruction of irrigation diversion facilities, washout of Clough Dam, and sediment and bedload transport to the lower reach and creek mouth.

Due to the relatively pristine nature of Mill Creek and its importance to Sacramento River anadromous fish populations, a flood damage assessment and additional GIS work, focusing on areas of impact, are required so that the watershed restoration projects outlined in the January 1997 *Mill Creek Watershed Management Strategy Report* can be efficiently implemented.

This approach involves six tasks. Phase I includes the first five tasks. Phase II consists of Task 6. These tasks include: 1) color infrared (CIR) aerial photography and digital orthophotography; 2) new enhanced mapping and GIS layers; 3) flood damage assessment; 4) developing long-term resource protection strategies; 5) developing presentation/communications materials for use by the Mill Creek Conservancy; and 6) procure and evaluate new aerial photography of the same area as Task 1.

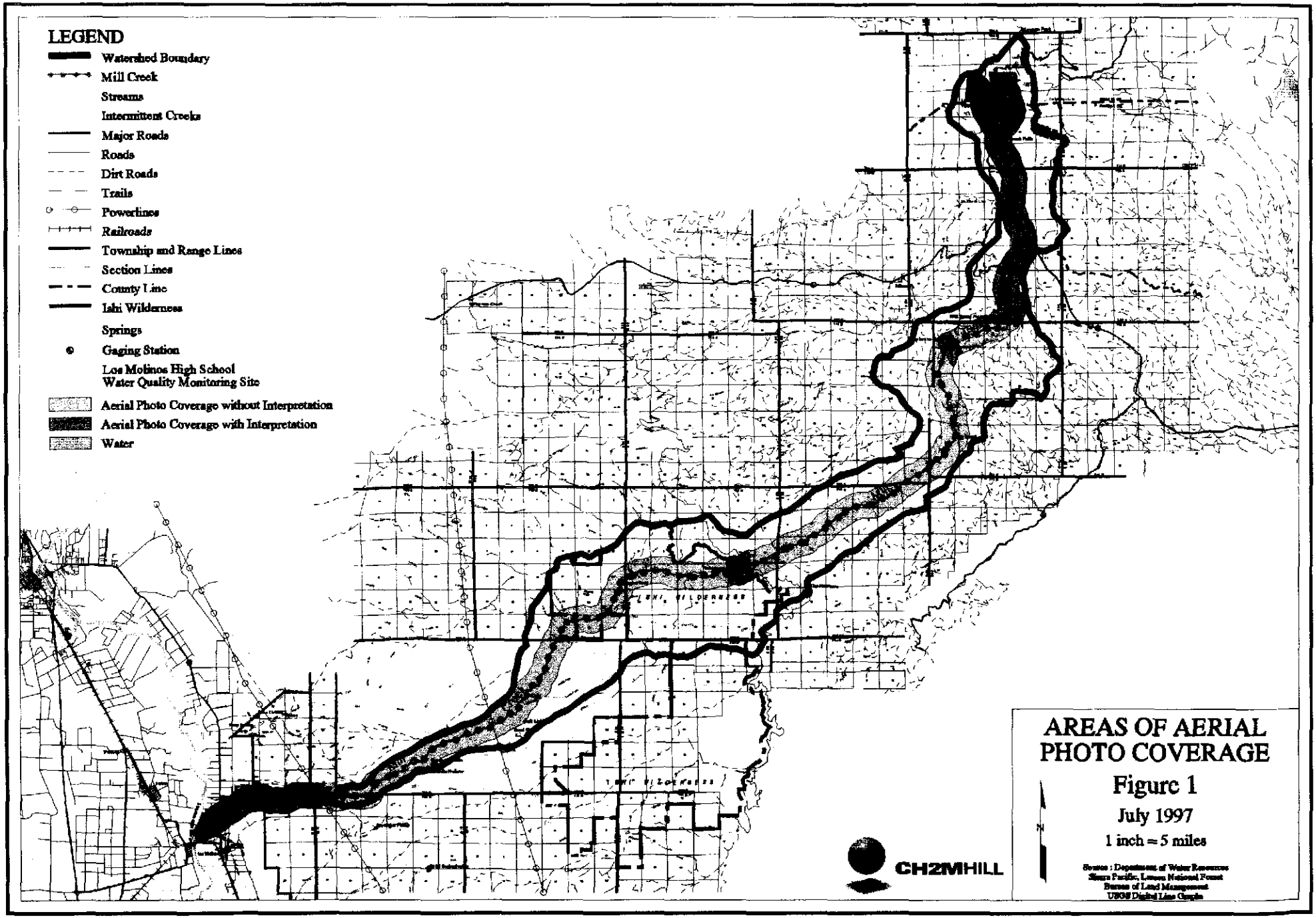
Location and/or Geographic Boundaries of Project

The project encompasses the Mill Creek Watershed, a tributary to the Sacramento River in Tehama County (Figure 1). Aerial photography and GIS mapping will cover approximately 2,700 feet on either side of Mill Creek for the 70-mile length. Portions of the lower and upper Mill Creek Watershed, which are primarily privately owned, will receive additional detailed evaluation. The Conservancy has the opportunity to promote implementation projects in these areas and influence management and resource protection activities. The middle portion of the watershed is managed by the U.S. Forest Service. The lower watershed area will include Mill Creek from the Sacramento River confluence to the USGS Gauging Station—approximately 7 miles. The upper watershed area of approximately 12 miles starts in the south near Mill Creek Homesites and extends northerly to cover East and West Sulpher Creeks. See Figure 1 for coverage.

Expected Benefit(s)

Stressors. Target stressors include those identified in the *Mill Creek Watershed Management Strategy Report* and habitat damage caused by the January 1997 flood event. The flood event altered existing conditions described in the Report, and this project will inventory the flood damage to update the existing conditions. This is a necessary step in implementing the habitat restoration actions recommended in the report. Stressors to be addressed include anadromous fish migration barriers caused by physical structures and flood damage to physical structures; channel form changes due to accelerated bank erosion and channel movement; loss of riparian habitat, including SRA habitat; and land use stressors related to forestry and agricultural practices and the effects of wildfires and landslides.

Species, Habitats, and Benefits. Reducing the stressors listed above will benefit instream aquatic habitat, SRA habitat, spring-run, fall-run, and late-fall-run Chinook salmon, and Steelhead trout. Other


LEGEND
Watershed Boundary
Mill Creek
Streams
Intermittent Creeks
Major Roads
Roads
Dirt Roads
Trails
Powerlines
Railroads
Township and Range Lines
Section Lines
County Line
Iahi Wilderness
Springs
Gaging Station
Los Molinos High School
Water Quality Monitoring Site
Aerial Photo Coverage without Interpretation
Aerial Photo Coverage with Interpretation
Water
AREAS OF AERIAL PHOTO COVERAGE
Figure 1
July 1997
1 inch = 5 miles
CH2MHILL

special-status species that are known to occur or have potential to occur in the Mill Creek Watershed that could benefit from restoration of instream aquatic habitat and SRA habitat include the California red-legged frog, foothill yellow-legged frog, northwestern pond turtle, valley elderberry longhorn beetle, bald eagle, Cooper's hawk, and Swainson's hawk.

The project will constitute an inventory of habitats and flood damage to these habitats within approximately 2,700 feet on either side of Mill Creek for 19 miles of the lower and upper Mill Creek Watershed areas. These data will constitute a baseline for the Mill Creek Conservancy watershed area for determining storm damage assessment, types of vegetation, and fire danger. There is no known detailed aerial photography or mapping for these stretches of Mill Creek either prior to or after the January 1, 1997, flood event.

Benefits to Third Parties and Other Restoration Programs. The proposed project is directly related to, and a necessary step in implementing, the restoration-related recommendations of the *Mill Creek Watershed Management Strategy Report*, as well as other programs of the Mill Creek Conservancy. The actions recommended for implementation in the Report will contribute to many other restoration/conservation programs and benefit numerous third parties, including the 17 signatories to the MOU described above. These include local, state, and federal agencies. Information developed by the Conservancy will be shared with the Lassen National Forest staff who are currently preparing a watershed analysis for Mill Creek. The Conservancy shares information with all participating parties.

Background and Biological/Technical Justification

Mill Creek was identified by The Resource Agency in the *Mill Creek Suitability Study* as having extremely high quality riparian and aquatic habitats. The Mill Creek Watershed is highly ranked in the CALFED *Bay-Delta Program Technical Team Report*, as well as the *Anadromous Fish Recovery Plan* prepared by the U.S. Fish and Wildlife Service (USFWS). Several other agencies have prepared reports and recommendations regarding fisheries and habitat protection for Mill Creek including: the *Upper Sacramento River Fisheries and Riparian Habitat Management Plan* prepared for The Resource Agency, the *Restoring Central Valley Streams: A Plan for Action* prepared by the California Department of Fish & Game (CDFG)), the *Comprehensive Assessment and Monitoring Program* prepared by USFWS, the *Mill Creek Long Term Management Strategies* in accordance with PACFISH prepared by USFS. The Mill Creek is also covered under the State petition to list spring-run Chinook salmon, which is currently in candidate status and being studied by the CDFG.

Proposed Scope of Work

The applicant will prepare monthly reports summarizing the degree of completion, activities during the reporting period, costs incurred, and major upcoming milestones.

Phase I

Task 1—Aerial Photography & Digital Orthophotography

Fly and produce 1"=750' (1:9000) color infrared (CIR) aerial photography for a band of approximately 2,700 feet on either side of Mill Creek for the 70-mile length of the watershed. See Figure 1 for coverage.

This photography will be used as a baseline for the Mill Creek Watershed to assess storm damage, vegetation types, and fire danger. There is no known detailed photography or habitat mapping for Mill Creek either prior to or after the January 1, 1997, flood event.

Task 1.1

Acquire new CIR aerial photography at a scale of 1"=750'. The CIR photography will consist of 30 flight lines containing 180 exposures. The photography will be stereo aerial photography with 60 percent forward overlap. The deliverable from the aerial photography will be one set of 9" X 9" CIR contact prints.

Conduct a phone search for aerial photography covering the Mill Creek Watershed and determine availability and usability of the photography for comparing pre- and post-storm conditions. Estimated task cost does not include the purchase of the photography, which can only be determined after the search is complete.

Task 1.2

Digital orthophotography at 1"=200' will be prepared from the CIR aerial photography acquired in Task 1.1 for the upper and lower watershed areas described above and shown on Figure 1. This photography will be compatible with the existing GIS system already in place at the Conservancy and enhance the foundation of the GIS data layers in place. Deliverables for the lower watershed area are eight 30" X 18" images at 1"=200' USGS Quadrangle accuracy. Upper watershed deliverables are sixteen 30" X 18" images at 1"=200' USGS Quadrangle accuracy.

Task 2—New Enhanced Mapping and GIS Layers

Building on the GIS information and the implementation recommendations of the *Mill Creek Watershed Management Strategy Report*, four additional enhancements/layers are recommended.

Task 2.1—Develop Riparian Vegetation Map

Develop a GIS riparian vegetation map from the information obtained in Task 1 using standard vegetation classification schemes. The minimum mapping unit will be 1 acre. This task will include 8 days for a two-person crew for field verification.

Task 2.2—Develop Topographic Map

Develop a GIS topographic map of the Mill Creek Watershed. The topographic map will be derived from USGS DEM data at a scale of 1:24000. Slope and aspect will also be derived. The topographic contours will be displayed as 10- to 50-foot contours, depending on contour density.

Task 2.3—Develop Fire History/Management Maps

Enhance the current fire history resource GIS map and data to include existing California Department of Forestry and Fire Protection (CDF) information and USFS data that became available after the *Mill Creek Watershed Management Strategy Report*. These data sets are currently in different formats and need to be standardized for fire management purposes. Up to three fire history GIS maps, covering different time periods, would be produced.

Task 2.4—Develop Water Quality Maps

Incorporate water quality monitoring data currently being collected by DWR, USGS and Los Molinos Mutual Water District into the Mill Creek GIS system. Interpret data and gather historical data. Produce up to three different GIS water quality maps (i.e., temperature, turbidity, and dissolved oxygen).

Task 3—Flood Damage Assessment

Using the information from Task 1 and Task 2, identify areas along Mill Creek in the upper (12 miles) and lower (7 miles) reaches where damage has occurred from the 1997 flooding. Identify potential fish passage barriers using aerial photography and field verification. This task includes 10 days for a two-person crew for field verification. Work will be coordinated or peer reviewed with personnel from CDFG, DWR, LMMWC, and cooperating landowners in their areas of expertise.

Deliverables will include a report and a GIS map that would identify and quantify, where appropriate, the following:

- Losses of riparian habitat (acres)
- Areas of channel movement
- Structural facility damage (bridges, roads, LMMWC facilities, Clough Dam)
- Significant stream bank erosion (lineal feet of bank or acres lost)
- Fish passage barriers

Once these areas are identified, implementation plans will be developed for up to five problem areas (i.e., structural fixes or plantings). The implementation plan will include location, schedule, and approximate costs.

Task 4—Long Term Resource Protection Strategy

Develop a long-term resource protection strategy from Task 1, 2, and 3 results. For example, once critical areas are identified in terms of SRA and fisheries habitat, the Conservancy will encourage acquisition of conservation easements or land purchases in those areas. Define high-value land characteristics, define areas of concern, prioritize areas, and investigate acquisition funding sources.

Task 5—Presentation/Communications Tool

The development of presentation and Communications tools is necessary to promote resource protection activities to the Mill Creek Conservancy members, additional landowners, and the general public. The database and monitoring information needs to be translated into language and concepts that can be understood by the community and used to influence resource protection actions.

Task 5.1

Develop presentation materials for Conservancy use. These will include:

- Presentation board display case with three fold graphic showing GIS maps and photos
- Revised GIS maps produced for *Mill Creek Watershed Management Strategy Report* to enhance presentation appearance
- Three, three-dimensional presentation maps showing the watershed with different GIS layers (i.e., topography, vegetation, and fisheries)
- Slides for each GIS map

Task 5.2

Develop an Internet website to disseminate project information and present watershed issues to Conservancy members and the public. The website could include newsletters, calendar of events, meeting notes, and the existing GIS maps. Training will be provided to the Conservancy on use of the website.

Phase II

Task 6 —Procurement of New Aerial Photography of the Mill Creek Corridor in Summer 2000

Fly and produce 1"=750' (1:9000) CIR aerial photography for a band of approximately 2,700 feet on either side of Mill Creek for the 70-mile length of the watershed. See Figure 1 for coverage. Limited additional analysis will not be completed under this request.

Both phases are necessary to evaluate the status and recovery of the Mill Creek Watershed following the January 1, 1997, flood event. Phase I tasks complement the Mill Creek Watershed Management Program and would be an important tool to guide implementation activities. Phase I funding is of primary importance to the Conservancy. Phase II would allow an evaluation of habitat recovery in 4 years after the flood. That information would be valuable to determine the rate of recovery and the areas that will require additional attention.

Monitoring and Data Evaluation

As soon as the data have been obtained and evaluated from Phase I and Phase II as described above, this information will be shared with all signatories and cooperators in the project, including state and federal resource agencies. This is a standard Mill Creek Conservancy operating procedure.

Implementability

The project will be coordinated and completed by the following personnel, who include paid staff, volunteer participants and consultants.

Project Coordinator will be Mill Creek Conservancy staff responsible for coordination with landowners, agencies and consultants for completing project tasks, progress reports and grant administration.

Volunteer participants will be Mill Creek Conservancy Board of Directors and members who assist in various project tasks.

Consultants will be the paid professional and technical personnel who perform the data gathering, evaluation, and interpretative project tasks.

The Mill Creek Conservancy has a strong record of successfully completing projects. The Conservancy has a policy of working in compliance of all applicable laws and regulations and has good relationships with the agencies involved in resource protection projects and programs in the area. This proposal is mainly for information gathering and is non-intrusive to the environment. These activities are not subject to CEQA or NEPA nor to other environmental permitting regulations. The Conservancy also has a policy to share the information that is developed from this type of project. Our group has the ability to seek local support and coordination of activities through our Board of Directors meeting, WAC annual meeting and other outreach opportunities.

Costs and Schedule

Budget Costs

Table 1 shows costs for the project by tasks. The table assumes that CALFED is the source of funds for listed costs. The project is not a construction project, and O&M costs and material acquisition costs are not applicable. The basis for the request for CALFED funding is that the proposed project is directly linked to goals and objectives of CALFED for restoration of anadromous fish populations and the habitat values that sustain them. The Mill Creek Watershed is deemed by CALFED to be an important watershed for maintaining the health of anadromous fish populations and overall ecosystem health in the Sacramento-San Joaquin Basin. The Conservancy has developed a *Mill Creek Watershed Management Strategy Report* that includes specific recommended habitat restoration measures. Because of damage to the Mill Creek ecosystem from the January 1997 flood event, the proposed project is a necessary step in implementing the recommendations of the Report. Project funding is needed to map existing conditions, evaluate flood damage, and identify areas of the watershed most in need of remedial restoration work.

Funding for Phase I of the project would be needed during the current funding cycle, because work would begin almost immediately and proceed during the ensuing year. Funding for Phase II, which will provide a basis for comparison of post-flood conditions more than 4 years after the flood, could be deferred, because Phase II will begin 2 years after Phase I is completed.

Scheduled Milestones

The following schedule, described below and shown on Figure 2, is based on the federal fiscal year (FY) calendar. This schedule assumes that grant approval will occur by October 1, 1997 (beginning FY 1998), and that work will begin following grant approval; if grant approval is received later than that date, this schedule will be adjusted accordingly.

Phase I

End of First Quarter FY 1998 (12-31-97)

- Research availability of aerial photography
- Survey needs of Conservancy regarding new maps and updated maps
- Determine technical needs of Conservancy

End of Second Quarter FY 1998 (3-31-98)

- Draft Maps (not dependent on aerial photography)
- Draft presentation material
- Draft website materials

End of Third Quarter FY 1998 (6-30-98

- Fly entire watershed
- Digital orthophotography

- Draft Maps
- Refine draft maps
- Flood damage assessment from preliminary information
- Long-term resource protection workshop
- Review presentation and website materials

End of Fourth Quarter FY 1998 (9-31-98)

- Refine maps
- Review maps at WAC—prepare final maps
- Make presentation utilizing new materials
- Present flood damage assessment at WAC meeting

Phase II

End of First Quarter FY 2001 (12-31-00)

- Produce watershed maps for comparison

End of Second quarter FY 2001 (3-31-01)

- Evaluate and compare maps from Tasks 1 and 6
- Prepare report for WAC

Subcontract Bid and Evaluation Process

The Conservancy selected CH2M HILL sole-source to provide subcontracted services. CH2M HILL has GIS expertise and extensive GIS experience in the region. The firm has been a partner to the Conservancy in developing the *Mill Creek Watershed Management Strategy Report* and establishing the existing Mill Creek Watershed GIS maps. The proposed project is directly linked to these previous efforts.

TABLE 1
Cost Breakdown

	Mill Creek Conservancy			CH2M HILL			
Project Phase/ Task	**Direct Labor Hours**	**Direct Salary/ Benefits**	**Overhead Labor**	**Service Contracts**	**Material/ Acquisition Contracts**	**Misc./Direct Costs**	**Total**
Task 1							
Task 1.1	20	$1,420		$14,000	N/A	N/A	
Task 1.2	30	$2,130		$29,000	N/A	N/A	
Task 2							
Task 2.1	50	$3,550		$12,500	N/A	N/A	
Task 2.2	10	$710		$5,300	N/A	N/A	
Task 2.3	20	$1,420		$8,500	N/A	N/A	
Task 2.4	20	$1,420		$14,500	N/A	N/A	
Task 3	1000	$7,100		$37,500	N/A	N/A	
Task 4	50	$3,550		$4,500	N/A	N/A	
Task 5	40	$2,840		$11,900	N/A	N/A	
Task 5.1	20	$1,420		$11,900	N/A	N/A	
Task 6	30	$2,130					
Total	390	$28,000		**$187,700**			$215,700

* Also indicate the source of funding for this Phase/Task and whether it is for O&M costs.

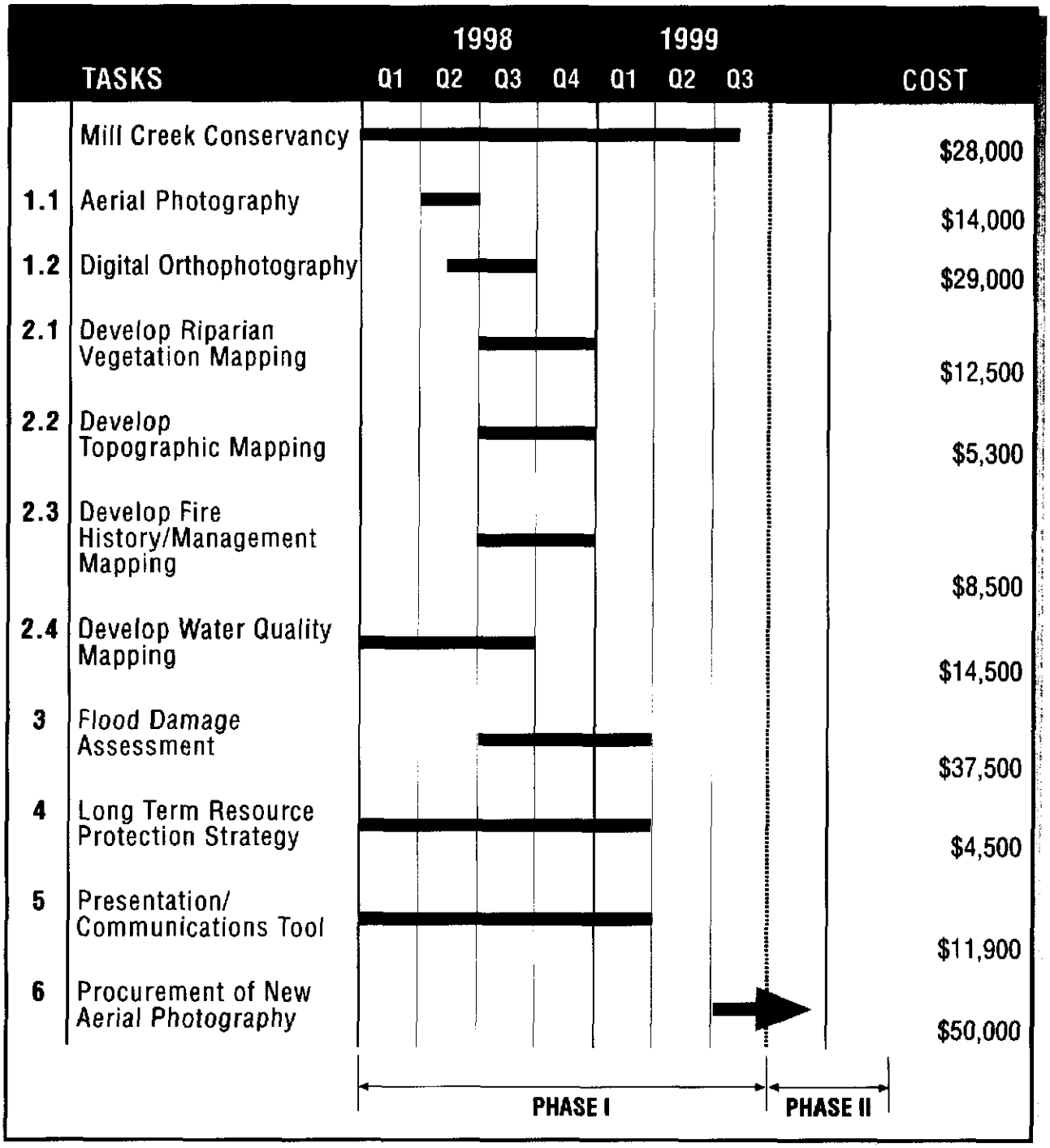


FIGURE 2
PROJECT COST AND TIMELINE

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Applicant Qualifications

The project would be managed and administered by Mill Creek Conservancy. Additional technical expertise in aerial photography, GIS resource and environmental conditions mapping, and watershed management will be provided by CH2M HILL.

The Mill Creek Conservancy (Conservancy) is a nonprofit conservation organization of local landowners, formed in 1994, dedicated to continued preservation and management of the Mill Creek Watershed ecosystem. The Conservancy has effectively organized cooperative efforts among landowners, agencies, and other stakeholders to pursue conservation and restoration projects and have successfully rallied support and raised funds from numerous local, state, and federal agencies, including many agencies in the CALFED partnership, for these projects. Among the many successful Conservancy projects and accomplishments are the Management Strategy for Mill Creek, creation and adoption of the Deer and Mill Creek Protection Act (AB 1413), completion of the *Mill Creek Watershed Management Strategy Report* (January 1997) through an EPA 319 grant, and the Mill Creek Watershed GIS maps funded by the Fish and Wildlife Foundation.

CH2M HILL is one of the nation's largest consulting engineering firms. Nearly 70 percent of the firm's revenues derive from consulting in water resources management. The Mill Creek Conservancy selected CH2M HILL as a partner in the proposed project, because the firm assisted the Conservancy in preparing the *Mill Creek Watershed Management Strategy Report* and was instrumental in developing the existing Mill Creek Watershed GIS maps. CH2M HILL is a consultant to CALFED and many individual CALFED agencies. The firm has extensive experience in habitat restoration projects affecting the Sacramento River watershed and tributary watersheds, including the design of fish screens for Glenn-Colusa Irrigation District and Reclamation District 108 diversions on the Sacramento River and the Butte Creek Water Supply and Fish Passage Plan. These projects were undertaken in cooperation with the U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, California Department of Fish and Game, California Department of Water Resources, and National Marine Fisheries Service.

Following are brief biographies of key personnel who will be involved in the proposed project and descriptions of their project roles:

Mill Creek Conservancy Personnel

Burt Bundy, Mill Creek Conservancy President

Burt Bundy, President of the Mill Creek Conservancy, would administer the proposed project, including budget and schedule management. He has extensive experience serving in public offices and on numerous committees and task forces that address water resources management and habitat conservation and restoration issues. Under his leadership, the Mill Creek Conservancy has completed a number of important projects, described above in this section, including the Mill Creek Watershed GIS project. Among the organizations in which Mr. Bundy plays or has played a key role are: Executive Director for the Sacramento Valley Landowners Association, which is involved in bank protection and flood control issues; three terms as Tehama County Supervisor; Chairman of CSAC Williamson Act Task Force; Chairman of North State Water Association; Chairman of Northern California Supervisors

Water and Agriculture Committee; President of Tehama Alliance for Resources and Environment; Member of Sacramento River Fishery and Riparian Habitat Advisory Council (SB 1086); public representative on BLM Ukiah District Advisory Council for the Spring-run Salmon Work Group; and Director of the California Farm Bureau Federation Board of Directors representing Tehama, Trinity, Shasta, and Siskiyou counties. This strong record of public involvement in environmental issues, including riverine habitat and fisheries issues, along with a proven ability to administer projects such as the proposed project, help ensure project success.

Kerry Burke, Resource Coordinator, Mill Creek Conservancy
B.A., Environmental Health Science; Graduate Studies in Environmental Planning

Kerry Burke, as Resource Coordinator for the Mill Creek Conservancy, will serve as liaison between the Conservancy and the CH2M HILL project team. She also will coordinate with other involved agencies and stakeholders, particularly to arrange data sharing among agencies and the project team. Ms. Burke has 11 years of public sector experience as a county and municipal planner and community development director, where she administered environmental compliance programs. She also has 8 years of experience as an environmental consultant. She is a founding member and organizer of the Conservancy and was project administrator for the Watershed Management Program and development of the *Mill Creek Watershed Management Strategy Report*. She is a member of the Spring-run Chinook Work Group and is a Tehama County Planning Commissioner. Ms. Burke has been instrumental in obtaining grants for habitat restoration and conservation programs, including a California Coastal Conservancy Grant for the City of Half Moon Bay; an EPA 319 Clean Water Grant for the Mill Creek Conservancy; a National Fish and Wildlife Foundation Grant for the Mill Creek Conservancy

CH2M HILL Personnel

Peter Rude, P.E.
M.S., Agricultural Engineering; B.S., Agricultural Engineering; Registered Professional Engineer in California and Hawaii

Peter Rude is an experienced project manager for water resources projects. He will serve as project manager for the CH2M HILL technical team. He will coordinate between the Conservancy and the CH2M HILL technical experts. He was project manager for the Lower Stony Creek Fish, Wildlife, and Water Use Management Plan, prepared for the U.S. Bureau of Reclamation. He led an interdiscipline team from three consulting firms to prepare the study, coordinating input from a technical team and task force comprising 33 individuals representing 22 federal, state, and county agencies; irrigation districts; and businesses. Major issues involved salmon restoration, gravel mining, bank erosion, flooding, diversions, riparian habitat enhancement, and public trust doctrine. Mr. Rude also was project manager for the Mill Creek Conservancy *Mill Creek Watershed Management Strategy Report*. The Report was developed with input from a watershed advisory committee representing federal, state, and local agencies; irrigation districts; and private landowners. Major issues included land use, aquatic habitat preservation, cooperative education, irrigation diversions, landowner rights, timber harvest and grazing practices.

Ronald Fehringer, P.E.
M.S., Agricultural Engineering; B.S., Agricultural Engineering; Registered Professional Engineer in California

Ron Fehringer will serve as project engineer, providing expertise in water supply and fish passage issues and riparian hydrology and hydraulics. He is a water resources engineer who has managed or served as task manager for a variety of watershed management and fish passage projects. He was a key contributor to the Mill Creek Conservancy's *Mill Creek Watershed Management Strategy Report.* For the Butte Creek Water Supply and Fish Passage Plan, he characterized the water rights associated with Butte Creek and met with water users to assess their existing diversions and future water needs. He developed a conceptual design for alternate means of water delivery to water users as part of a comparison of water supply and fish passage alternatives for the USBR. Mr. Fehringer served as project manager and lead project engineer for the preliminary design, final design, and construction management inspection for the Western Canal Water District's Butte Creek Siphon and Dam Removal project. The dual objectives of this project were to improve fish passage in Butte Creek, while simultaneously improving the reliability of water deliveries to District customers. For Caltrans, he performed a hydraulic analysis using HEC-2 to calculate water surface profiles and rating curves for Berry Creek downstream of Highway 139. In addition, he used HEC-1 to develop design flows for the Berry Creek culvert crossing of Highway 139 in an evaluation of the adequacy of existing culverts.

Barbara Schmitz, Senior GIS Consultant
B.S., Geography

Barbara Schmitz will manage the aerial photography and development of GIS maps and databases. She is a senior GIS consultant and project manager in CH2M HILL's Cartometric services group, with 14 years of experience in all aspects of GIS project planning, management, and implementation. Her expertise includes a variety of GIS software packages and automated mapping methods. She was GIS coordinator for the Mill Creek Conservancy's Mill Creek Watershed GIS project funded by the Fish and Wildlife Foundation. She was GIS task manager for the Barney Reservoir Expansion Environmental Impact Study, in which she integrated data from a variety of sources and formats to map base conditions and impact areas for wetlands and other habitats. She also provided GIS expertise for the City of Salem Water Master Plan and Sewer System Evaluation Study and Master Plan. GIS data were used to develop a water system model using LYNX software. Ms. Schmitz also used GIS data to develop a hydraulic model for the sewer system. For the City of Vancouver, British Columbia, she provided technical support for a Water Distribution Master Plan. As GIS task manager for the Pacific Gas Transmission natural gas pipeline project, she integrated data from a variety of sources to produce route alignment and resource mapping.

Compliance with Standard Terms and Conditions

Mill Creek Conservancy agrees to comply with all terms and conditions stated in Attachment D to the RFP, with one exception. Mill Creek Conservancy requests an exemption from the Payment Retention Clause. The Mill Creek Conservancy successfully completed work under a similar grant without Payment Retention. An exemption would allow payment of all allowable reimbursement with a monthly billing cycle and eliminate complicated accounting measures to track the 10 percent.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME: Mill Creek Conservancy

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME: Kerry L. Burke

DATE EXECUTED: 7-23-97

EXECUTED IN THE COUNTY OF: Tehama

PROSPECTIVE CONTRACTOR'S SIGNATURE: [signature]

PROSPECTIVE CONTRACTOR'S TITLE: Resource Coordinator

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME: Mill Creek Conservancy